

**Abstract**

Apparatus driven by high-frequency AC current source, for driving an electric load with low-frequency AC current, that comprises a current splitting inductor, for generating, from the high-frequency current source, a first and a second high-frequency AC current sources; a rectifier, coupled to the splitting inductor, consisting of rectifying diodes for rectifying the first and second high-frequency current sources, and capacitors, charged by the diodes, the capacitors being corresponding to the first and second DC current sources; a controllable half-bridge commutator having a first and a second control inputs, the commutator being coupled to the DC current sources, for commutating the DC current sources, for allowing to generate, from the DC current sources, the low-frequency AC current required for driving the electric load; and a control circuitry, having a first and a second outputs, the outputs being coupled to the first and second control inputs, respectively, and outputting two complimentary pulse trains, each of which having a frequency being automatically adjusted according to the operating conditions of the electric load, for controlling the switching time of the commutator, thereby causing the commutator to alternately change the direction of the current passing through the electric load.